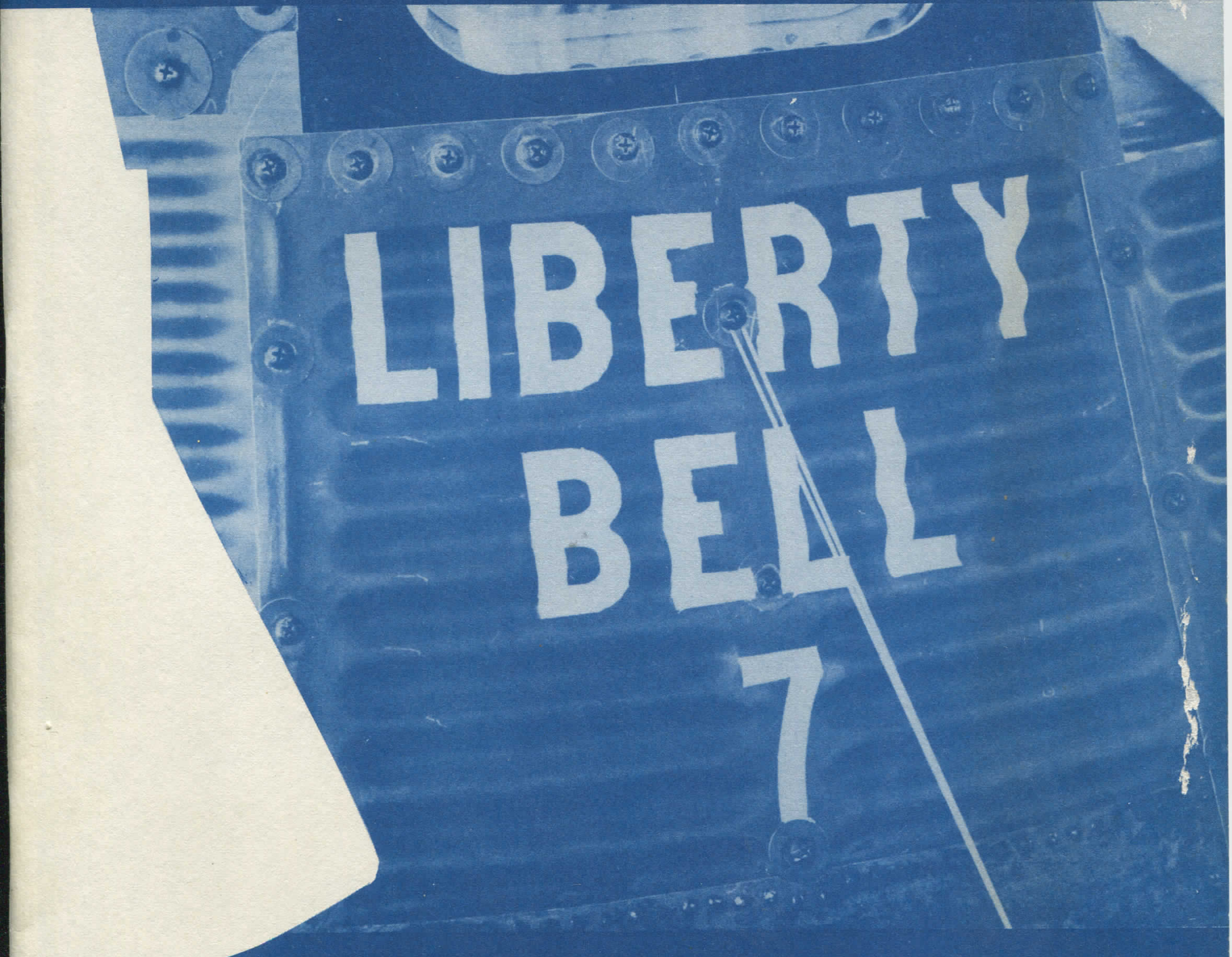
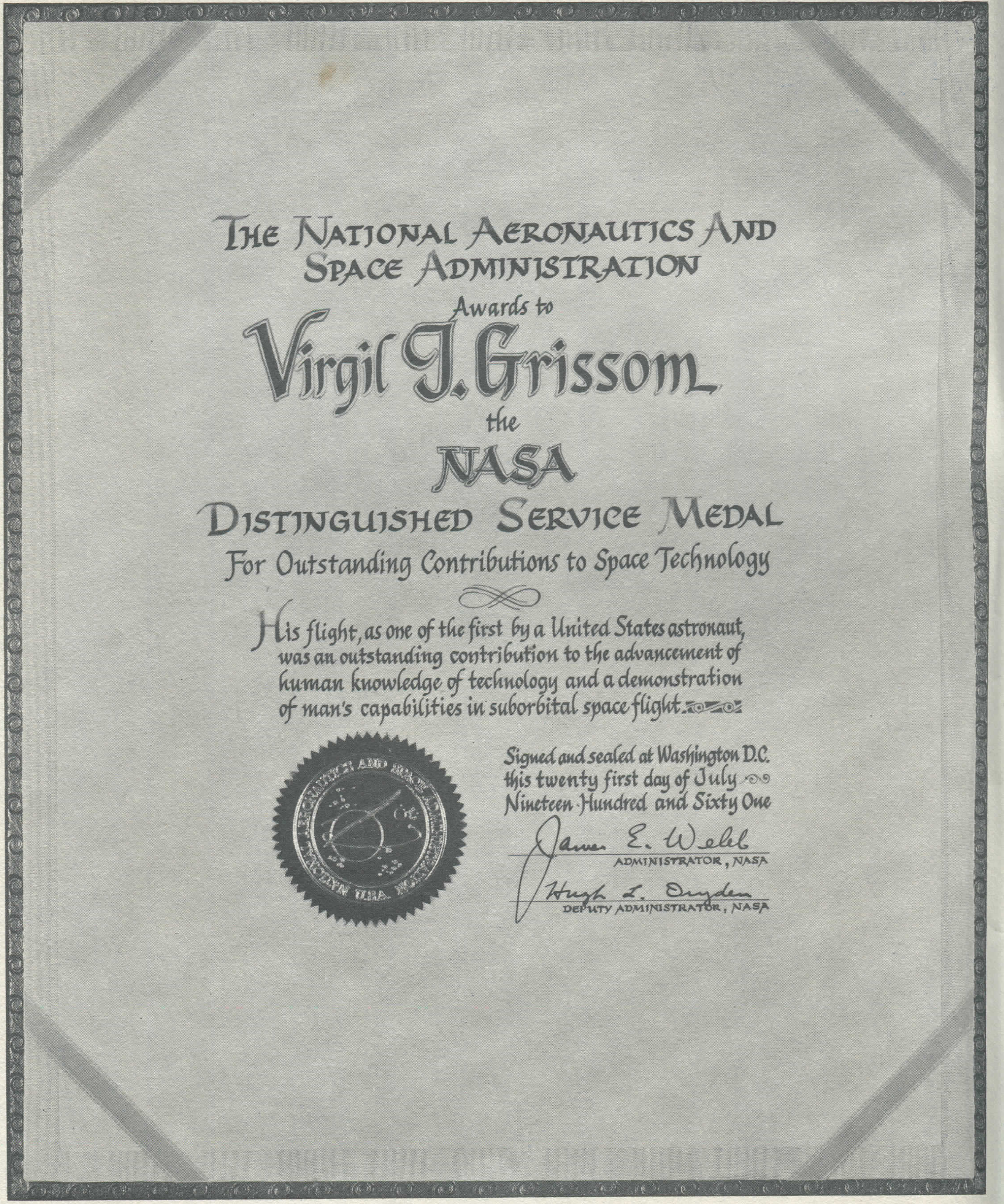
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SPACE TASK GROUP



JULY 21, 1961



THE NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION

Awards to

Virgil I. Grissom

the

NASA

DISTINGUISHED SERVICE MEDAL

For Outstanding Contributions to Space Technology

His flight, as one of the first by a United States astronaut, was an outstanding contribution to the advancement of human knowledge of technology and a demonstration of man's capabilities in suborbital space flight.

Signed and sealed at Washington D.C.
this twenty first day of July
Nineteen Hundred and Sixty One

James E. Webb
ADMINISTRATOR, NASA

Hugh L. Dryden
DEPUTY ADMINISTRATOR, NASA

On July 21, 1961, the National Aeronautics and Space Administration's Space Task Group successfully launched the second of the seven Project Mercury Astronauts on a suborbital ballistic space flight. This flight was made by Astronaut Virgil I. (Gus) Grissom. About 2-1/2 months earlier, Grissom's fellow astronaut, Alan B. Shepard, Jr., made the first manned space flight in the Project Mercury program.

MR-4, as Grissom's flight was known, was almost identical to Shepard's. It followed the same general flight path and landing was in the same area down the Atlantic Range. Both these flights demonstrated what Project Mercury had been established to ascertain - that man can perform useful tasks in a space environment.

MR-4 gave Grissom 16 minutes of flight, 5 of it weightless. It subjected him to 11g and took him 118 miles into space at a speed of better than 5,000 miles per hour. Like Shepard, Grissom came out of the flight in excellent condition and quipped later that he recommended the trip to everyone.

Grissom's flight proved that MR-3, carrying Shepard, was not just luck. It proved that the theories, the research and development, and the many test launchings undertaken to prove out the spacecraft concept were right and the program established at the inception of Project Mercury was valid.

The success of the flights of Grissom's Liberty Bell 7 and Shepard's Freedom 7 spacecraft were so successful that NASA felt it had obtained sufficient data to warrant cancellation of the remaining Redstone flights. All Space Task Group efforts are now being channeled into the orbital phase of the program.

These flights were the result of months and months of hard work by many people, not only in Space Task Group but in private industry as well.

They had their beginning in October, 1958, when NASA was established. Space Task Group was formed immediately and charged with the task of establishing a research and development program leading to manned orbital space flight.

Beginning with a nucleus of engineers and scientists from NASA's Langley Research Center, Space Task Group began the unprecedented task of designing and providing a spacecraft and systems that could carry a man into orbit and return him safely through the searing heats of reentry into the earth's atmosphere.

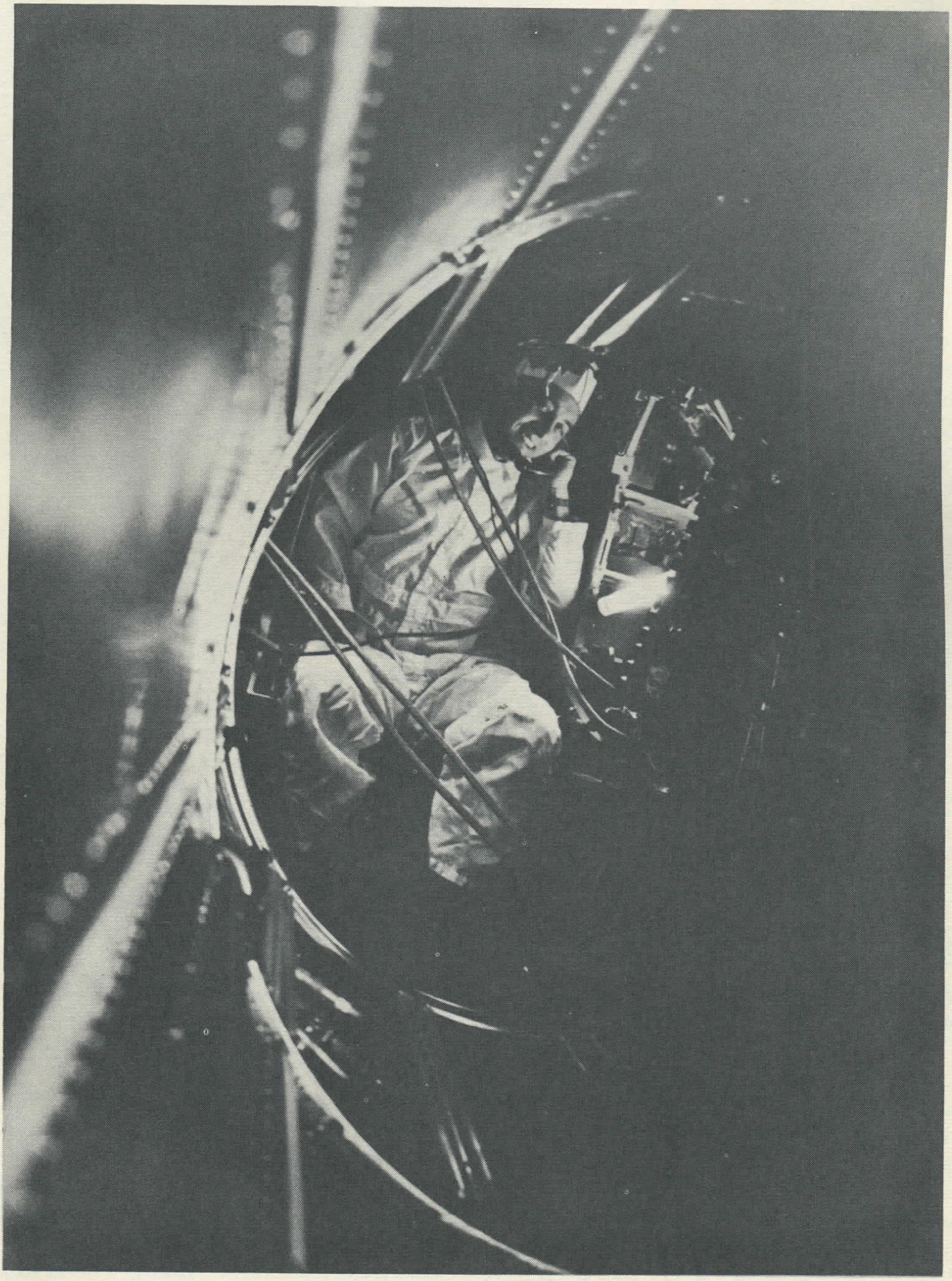
Months of hard work followed, solving one of the most complex engineering jobs ever undertaken - getting man into space and safely back to earth. Literally beginning from scratch, STG engineers and scientists began the long, arduous task of designing a spacecraft and systems that could take one of the astronauts on an earth orbit and return him safely to earth.

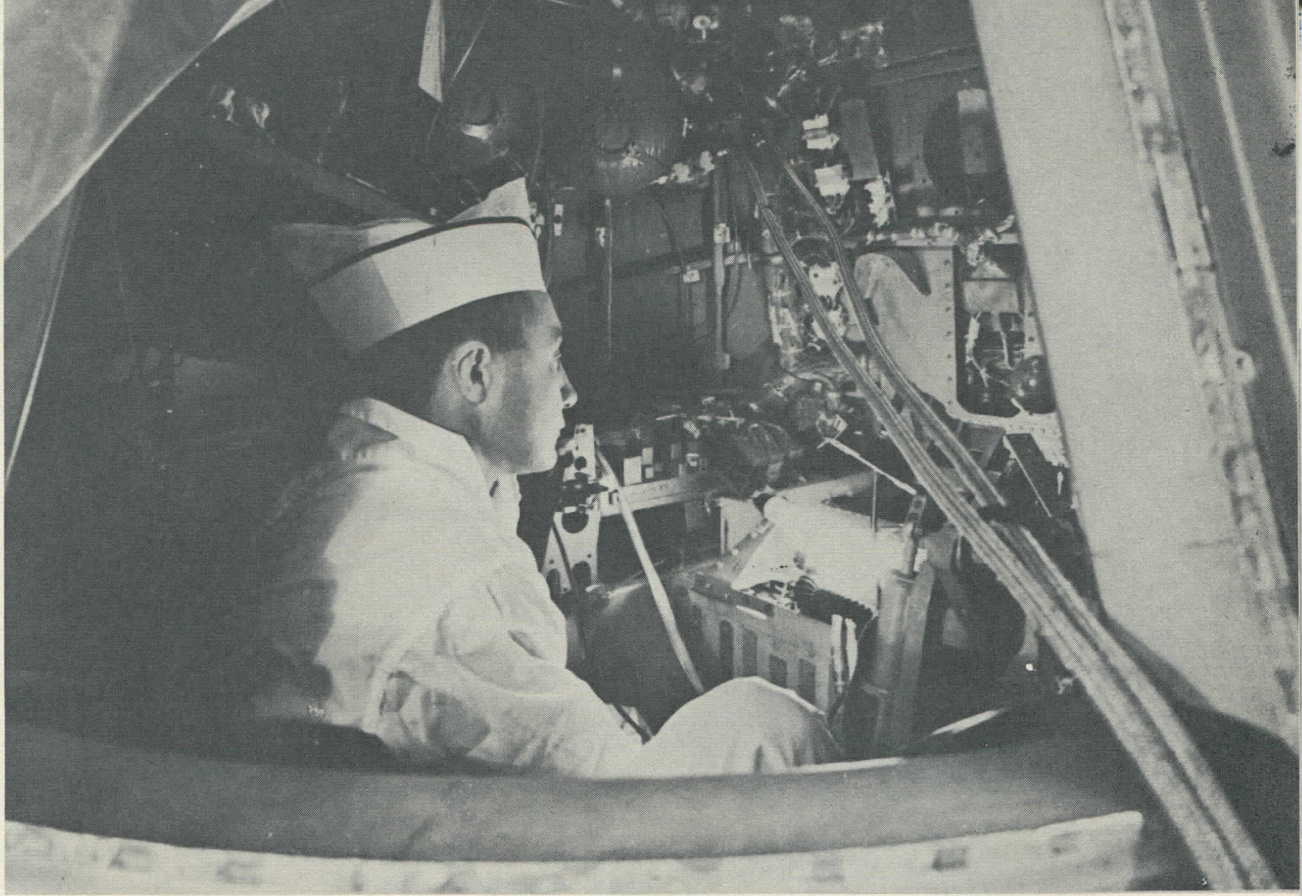
Based on NASA design, the McDonnell Aircraft Company, St. Louis, Missouri, which was selected as the prime contractor for the Mercury spacecraft, began construction of the United States' first spacecraft. Less than 18 months later the first production version was test flown from NASA's Wallops Island, Virginia, station.

From that day on the tempo increased. The spacecraft was first put through various tests aboard the Little Joe launch vehicle, checking out the design concept, the escape tower, and conditions under maximum loads envisaged for an Atlas abort maneuver. Two Rhesus monkeys were launched in this series and suffered no ill effects whatever.

Next came the Redstone series and the beginning of the Atlas series, running concurrently. In the second of the Redstone launches a chimpanzee, named Ham, made a ballistic, suborbital flight and emerged in excellent condition. Next came Shepard's flight and then Grissom's.

With the completion of the Redstone series, the Space Task Group has turned its full attention to the orbital phase of the program. The successes to date are the result of 2-1/2 years of strenuous research and development. They prove beyond a doubt that the design concept and systems of the Mercury spacecraft are capable of performing the function for which they were designed - to carry a man into orbit around the earth. This is NASA's next goal and the next step to interplanetary travel as envisaged in the follow-on programs.





As the day for the flight of Mercury-Redstone 4 approached, the mission astronaut became an integral part of the tests. He participated in the numerous systems checks carried out in the NASA's Hangar S test facility at Cape Canaveral, Florida. His waking hours were spent going over every component again and again with McDonnell and NASA engineers and scientists assigned to the test.

The group worked as a team, spending hours going over the systems. Grissom became a part of his spacecraft - the component no mechanism could replace - the living, thinking part. He became confident that he knew his vehicle as well or better than the many high-performance aircraft he had flown and tested in the past. He knew what part was to perform what function and at what time.

The spacecraft was subjected to pressure checks in a special Mercury altitude chamber in Hangar S. Both man and machine were observed under simulated space conditions. Again, nothing was left to chance - everything had to work perfectly.

At the same time, the Redstone launch vehicle was undergoing testing on Pad 5. The launch crew checked and rechecked all systems to insure that everything was in perfect working order.

When the crews were finished with the vital inspections and systems tests, Liberty Bell 7 would be moved from Hangar S to the launch pad and mated with the Redstone. Then would come further tests to make certain all systems worked together.

The preparation of the spacecraft and the launch vehicle involves close scrutiny of literally thousands of parts. No small detail can be overlooked. Everything must be in perfect order as the final moments of countdown approach.

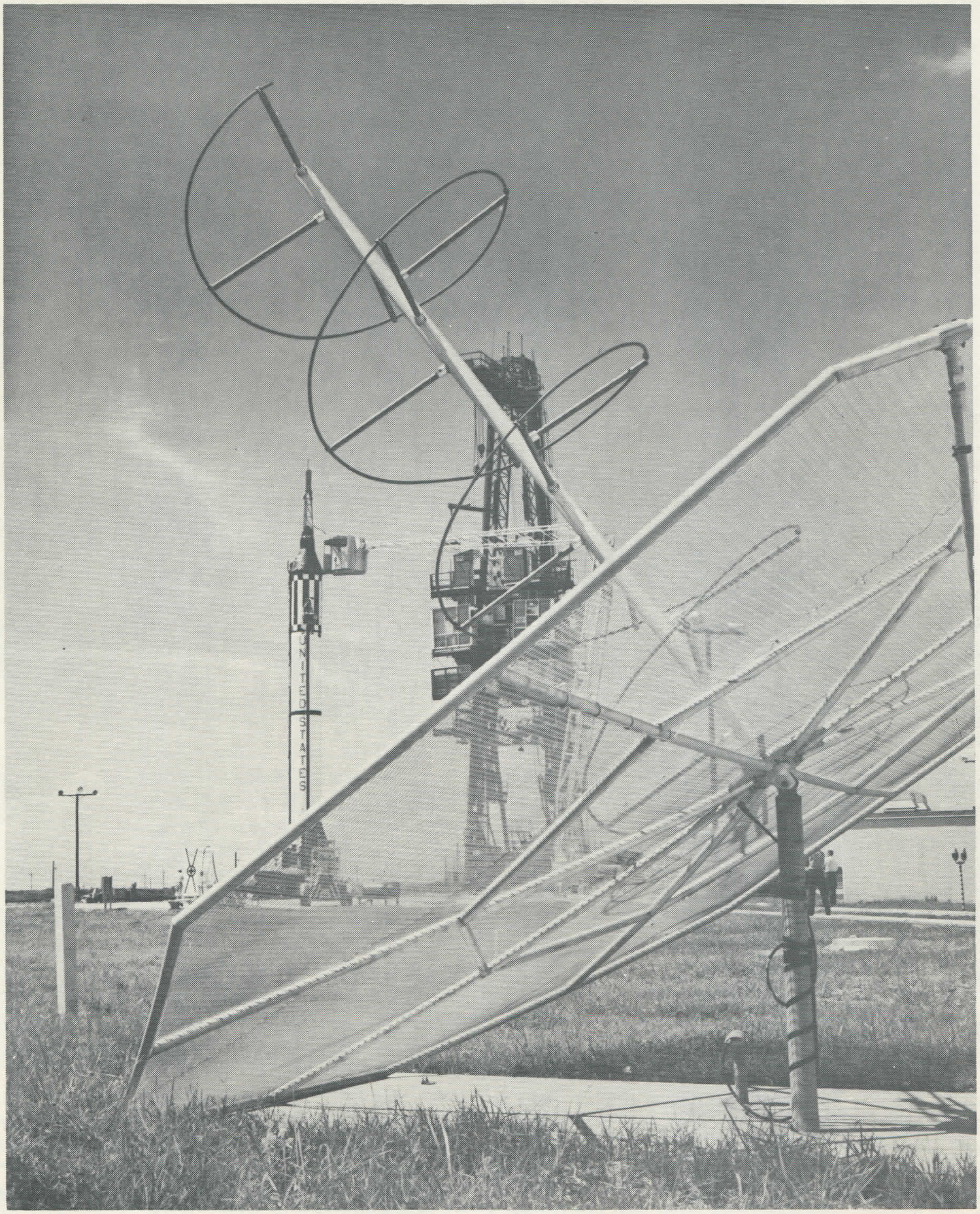
As final preflight operations proceeded on schedule at Canaveral, NASA personnel manning stations at Bermuda and Grand Bahama Island, were preparing to track the flight of MR-4. At sea, ships and aircraft of the Mercury recovery force were on station and ready. It was planned that a helicopter from the aircraft carrier USS Randolph would pluck the astronaut from the ocean and return him to the ship for a preliminary physical. Later, Grissom would be flown from the carrier deck to a medical facility on Grand Bahama Island for a detailed debriefing session.

When Liberty Bell 7, Grissom's spacecraft was delivered to Cape Canaveral, it was immediately moved into Hangar S where an intensive and exhaustive test and checkout program began. There had been some design changes incorporated in Liberty Bell 7, making it somewhat different from Shepard's Freedom 7. Among these changes was the inclusion of an enlarged pilot observation window which replaced two 6-inch circular ports. This window enabled Grissom to observe more during the MR-4 flight than Shepard had been able to do in MR-3.

When the spacecraft was moved into Hangar S, the tests began immediately. About 2 weeks prior to launch, 3 days of simulated flight tests began using the MR-4 spacecraft at the pad, where it had been mated to its Redstone booster. Prior to this, the spacecraft underwent numerous checkouts in the hangar. Grissom was a part of all these tests.

During the week preceding flight, the mission was rehearsed repeatedly, both in the vehicle and in a spacecraft simulator known as the Mercury Procedures Trainer. Here, any little last minute details were ironed out and Grissom became that vital part of manned space flight. During the repeated simulations and the tests, he became a living component of the spacecraft. He became aware of the things that could happen and learned the steps necessary to compensate for these.

A final mission dry run started at T minus 3 days, including securing the side hatch, purging the pilot's cabin with oxygen, and pulling away the gantry. Everything was ready, the dry run came off without a hitch, and both man and spacecraft were ready for flight. During these same periods, the Redstone launch vehicle had been undergoing tests of its own and it too was ready. MR-4 was "GO."


UNITED STATES

As in MR-3, the weather had a major role to play in Grissom's flight. For days the weathermen had kept their eyes on the pressure areas. Launch had to be accomplished in ideal conditions, with visual observation a must.

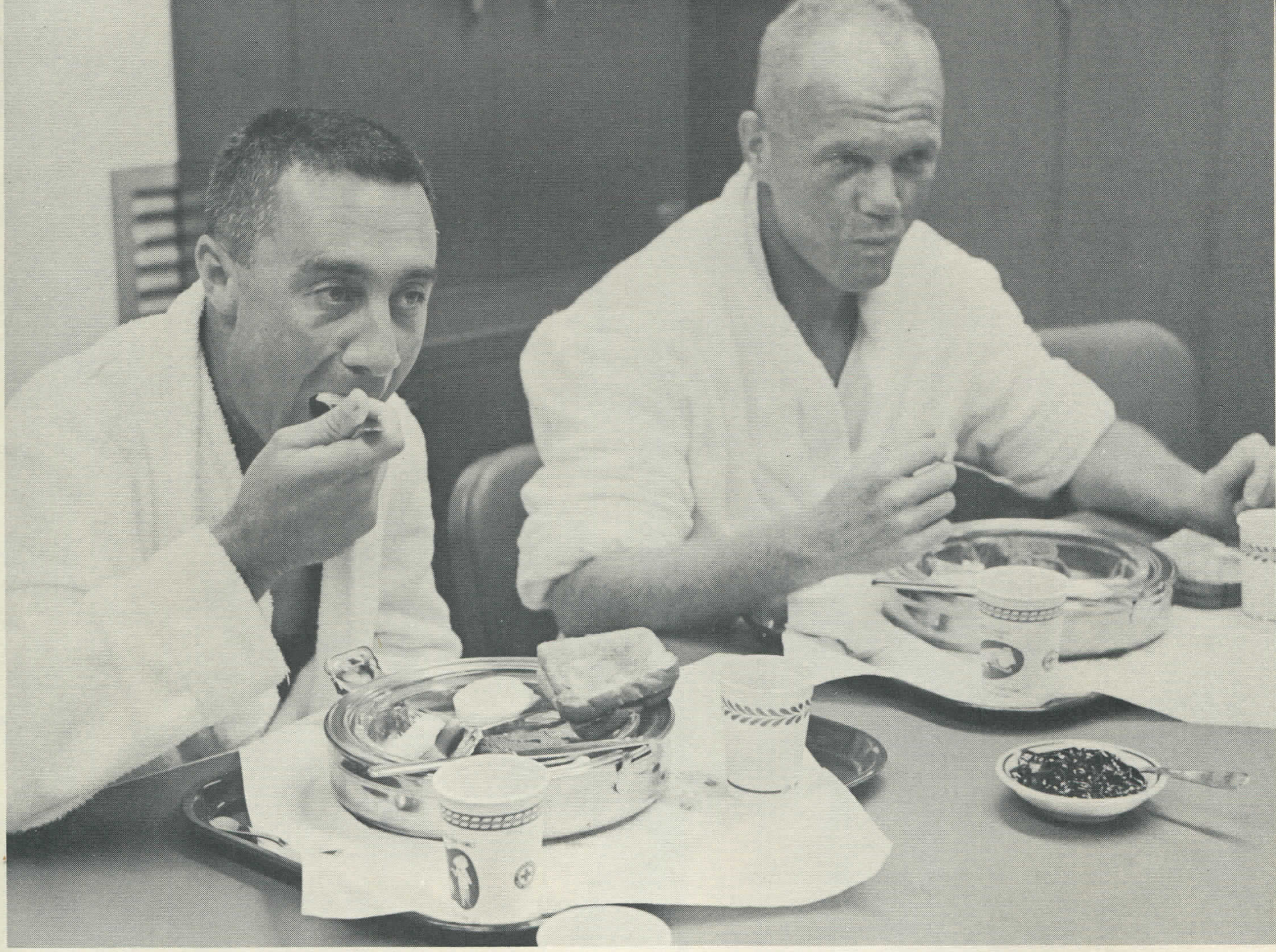
Twice the launch was scrubbed due to heavy cloud cover in the launch area. NASA officials met with weathermen at regular intervals for briefings. Advisories were put out to keep the press corps informed of the status of the flight at all times.

U.S. Weather Bureau meteorologists kept the flight directors informed of the conditions at all times, not only in the launch area but also in the landing area.

On the morning of the launch, a 2:30 a.m. weather briefing was held. The forecast was for good weather conditions with cloud patches estimated to arrive over the launch site later in the morning. Based on this prediction, NASA officials gave MR-4 a "GO" sign.

The countdown proceeded. Heavy cloud cover over the launch area began to dissipate and as launch time neared, the conditions were the best they had been in several days.

At launch time the sky had a minimum of cloud coverage and MR-4 was launched. Shortly after, the predicted cloud patches began to move into the area.



At 1:05 a.m. on launch day, Dr. William K. Douglas, the astronaut's personal flight surgeon, awoke Grissom. Moving into the other room of the medical facility in Hangar S, Grissom sat down with several NASA officials for breakfast. There was very little difference from any other meal, except everyone present knew that in a few minutes preparations would begin which would culminate in Grissom's flight into space.

Grissom had been in the Hangar S medical facility for almost a week now. The previous Tuesday he had been awakened and told the shot was scrubbed. He went back to sleep.

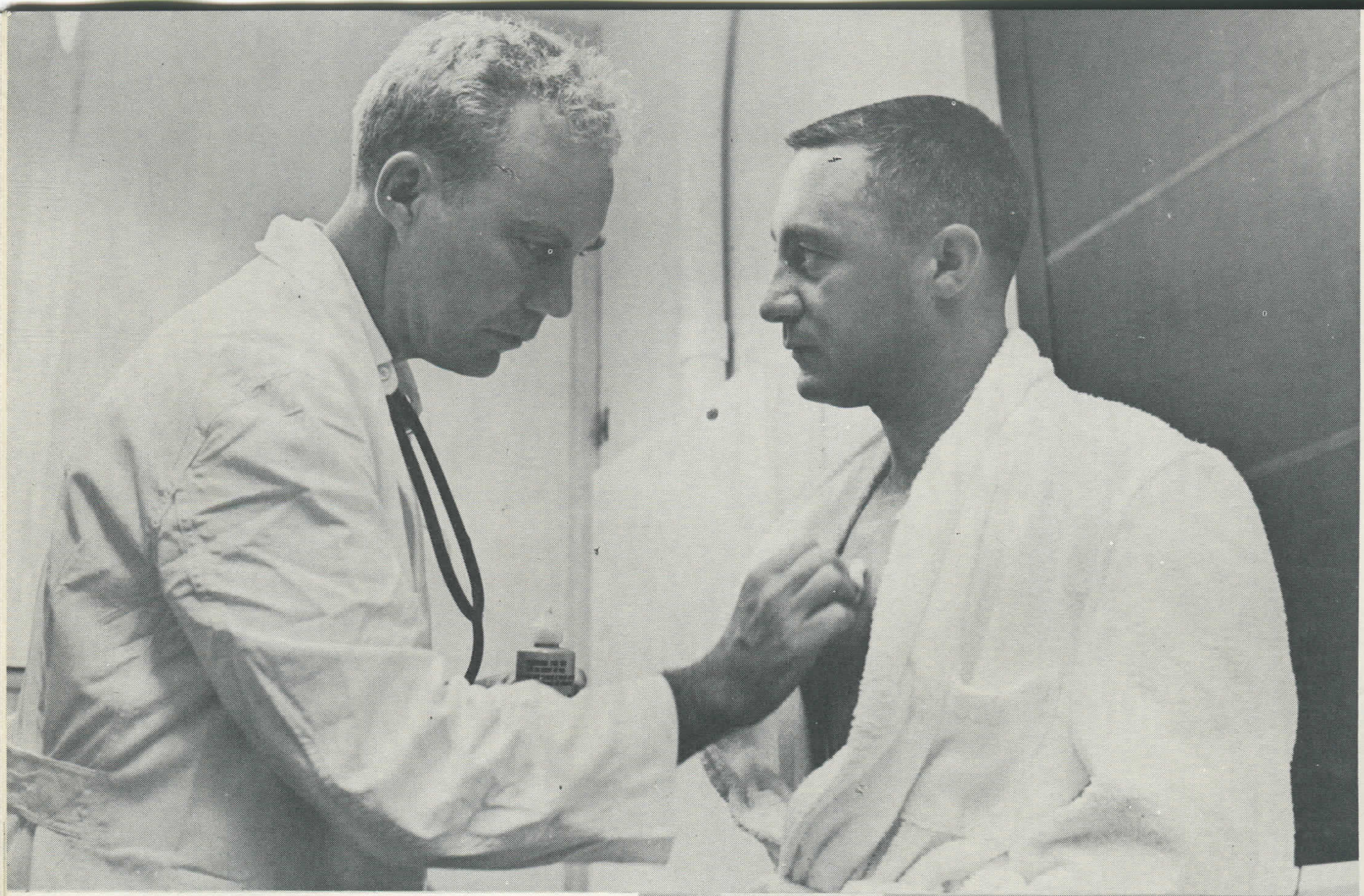
On Wednesday he got up, had breakfast, went through the physical examination, and suited up. Then he went out to Pad 5 in the transfer van, climbed into the spacecraft where he lay for several hours in his contoured couch only to have the flight called off 10 minutes before launch because of the weather.

This day, Friday, was a carbon copy of Wednesday. Everything was going along as it should. While Grissom was having breakfast and getting ready for the physical and suiting-up process, the Cape and Cocoa Beach began to come alive with people, some of whom were to take part in the remaining preparations for the flight, others just to see what was going on. Hundreds of news media representatives began to report to their assigned pool units to be escorted to the Cape. The motel dining rooms were filled with people having breakfast, their thoughts on the flight.

Slowly the pool units began to pull out for the Cape to take up their assigned stations. Television units began getting their equipment into operation, ready to go live shortly before launch time. Reporters were gathering at the press site, some already making notes for the stories they would call in to their respective newspapers and radio stations.

Out of sight of all this the men of NASA were going about their jobs of getting ready to send another of the seven astronauts into the void of space. It was the first time all over again. Almost to a man they knew Grissom, knew him for the "quiet" one. Every man among them did his job and then rechecked to make sure it had been done right. To them this was not just another shot, this was Gus depending on them to make sure everything was ready for him, that not one thing had been overlooked.

Gus was ready, the bird was ready, the weather was improving. MR-4 was on the verge of becoming history, of proving once again that Project Mercury was valid. The second man in the free world was about to join his fellow astronaut as one of the very few to leave the earth for space.



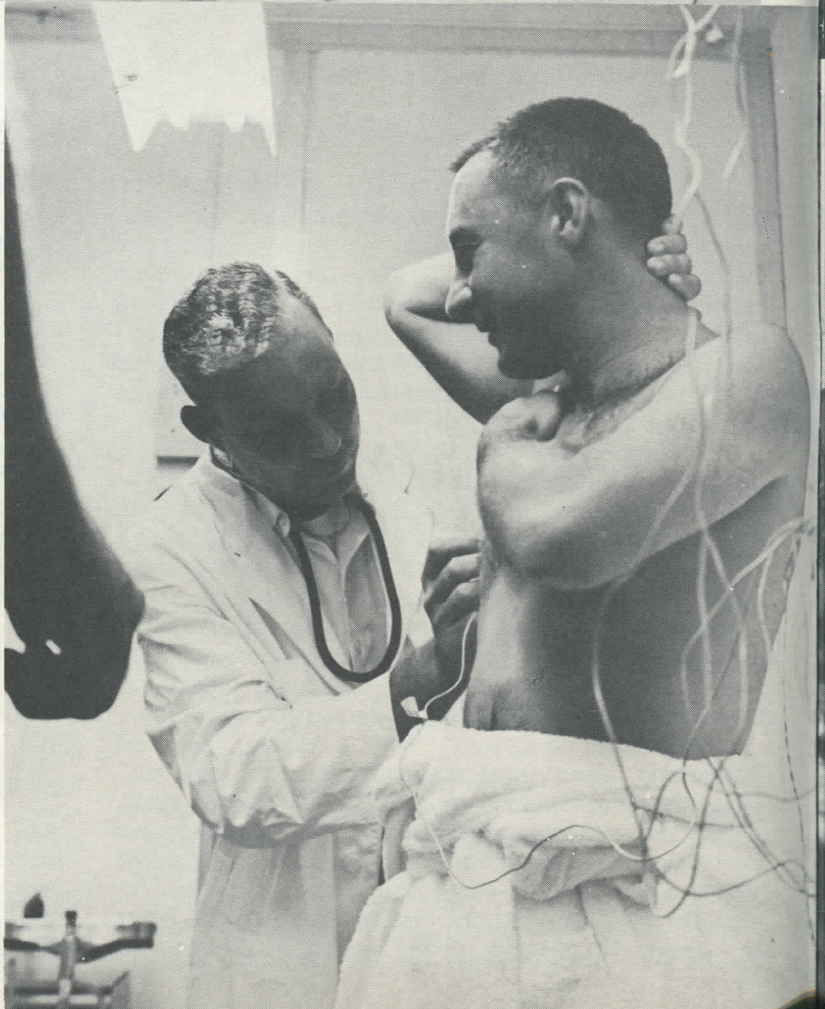
At 1:55 a.m. shortly after breakfast, Dr. Douglas began the preflight physical and attachment of the body sensors that would keep a scientific eye on the astronaut's condition during the flight.

This pair had undergone this same procedure many times before, prior to simulated space flights on the centrifuge at Johnsville, Pennsylvania. It was identical to the routine they had undergone 2 days before when Grissom was taken out of the spacecraft 10 minutes before launch.

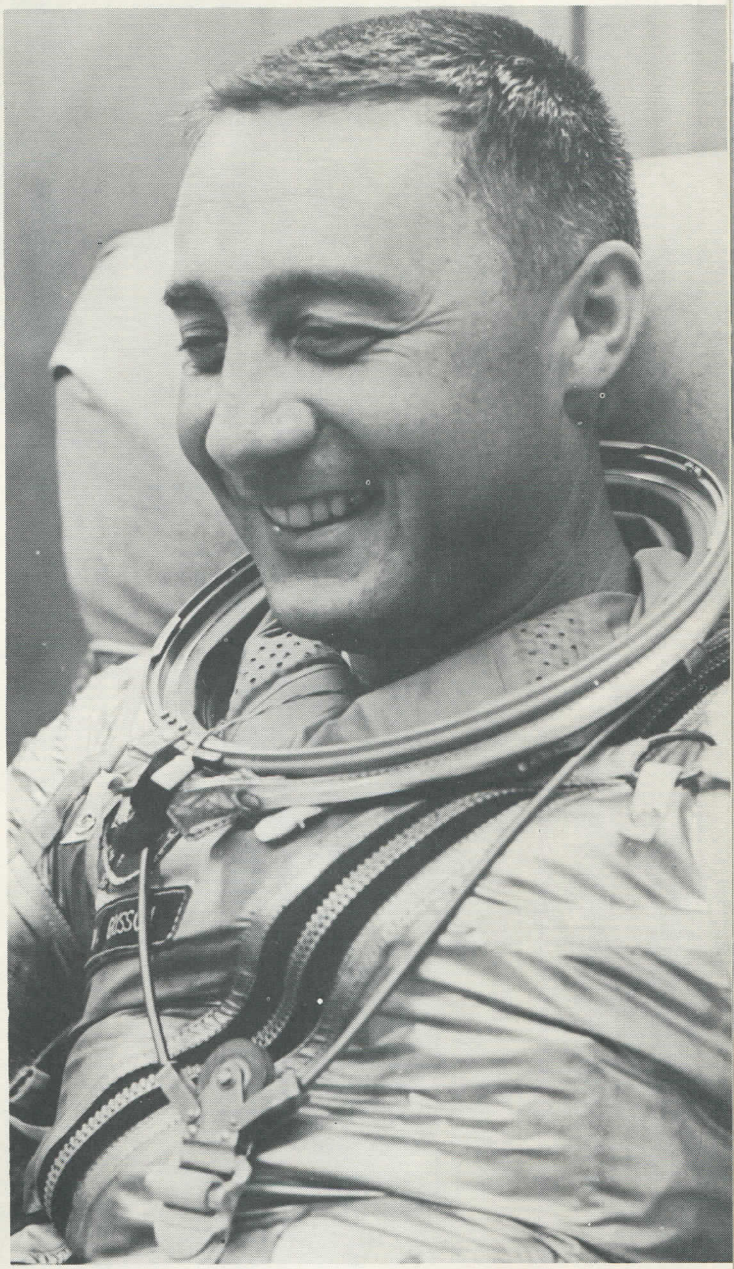
With the physical over and the body sensors all in place, next came the suiting-up process. With the assistance of Joe Schmitt, crew equipment specialist, Grissom began donning the 20-pound suit.

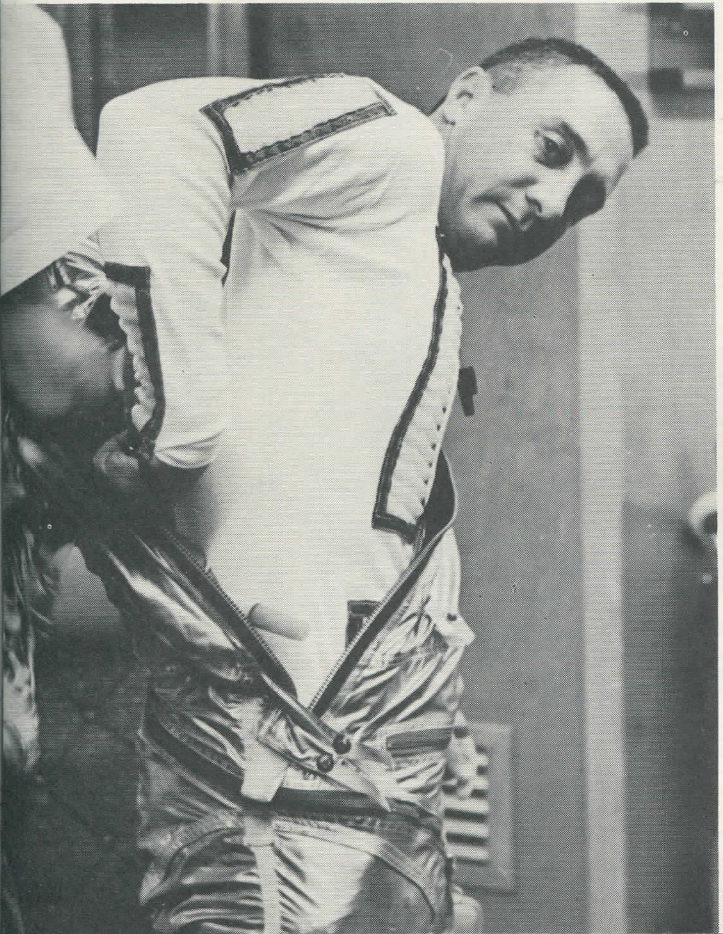
First came the underwear with the air patches and then the suit itself. Next came the boots and with the exception of putting on the helmet, Grissom was ready for flight.

After getting dressed, Grissom was ready to move to a couch unit for a full pressure check of the suit to make sure there were no leaks. Ascertaining there were no leaks Grissom was removed from the couch and a small portable air conditioner was attached to a suit inlet to keep him cool during the trip to Pad 5 and the waiting spacecraft.

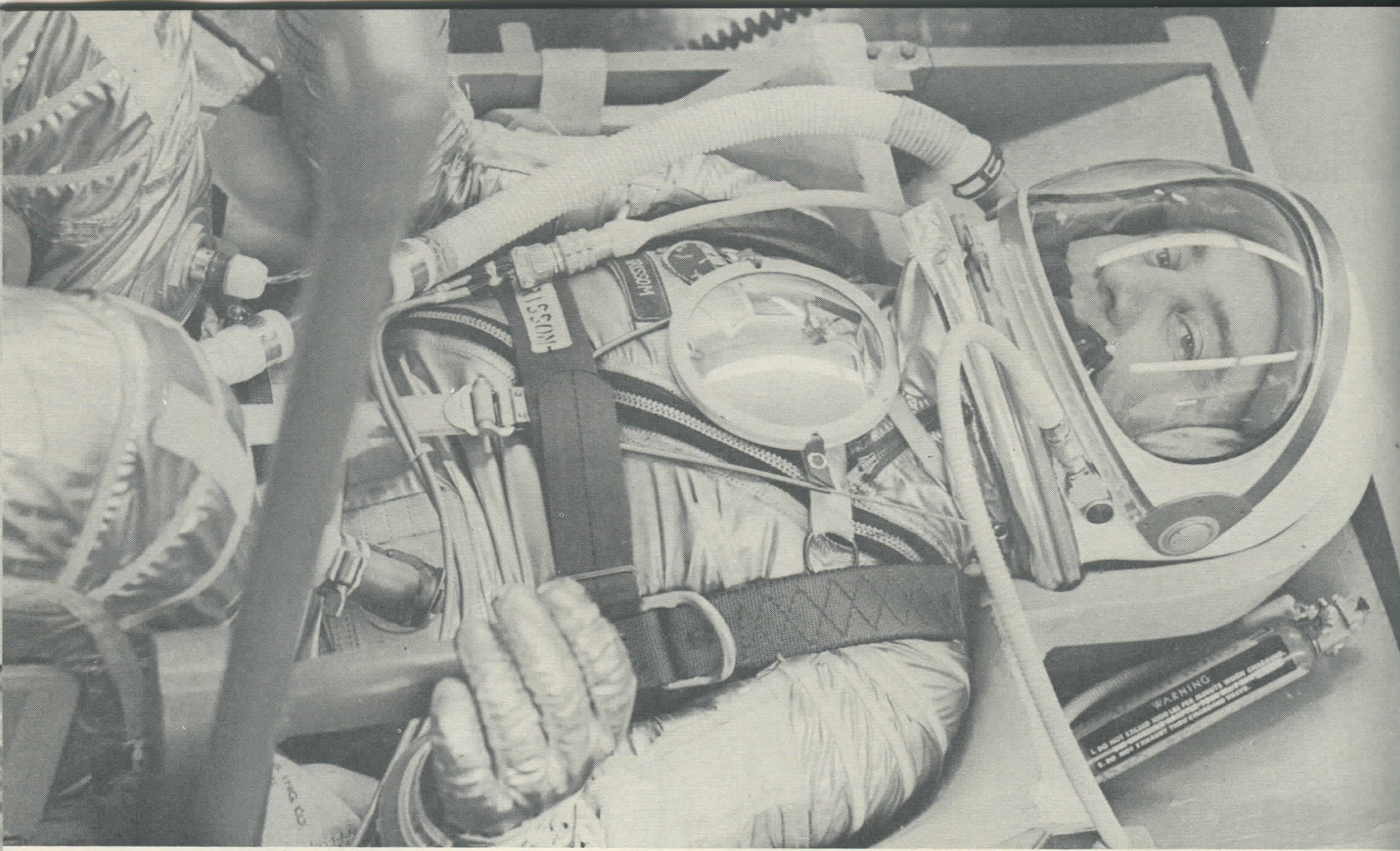


During the suiting-up process, Grissom kidded with Schmitt and Dr. Douglas, showing no signs of strain or tension. In fact, he seemed to be elated that at last the weather and all other conditions were favorable for the flight. Grissom was ready and waiting for word to proceed to the pad for insertion into Liberty Bell 7.



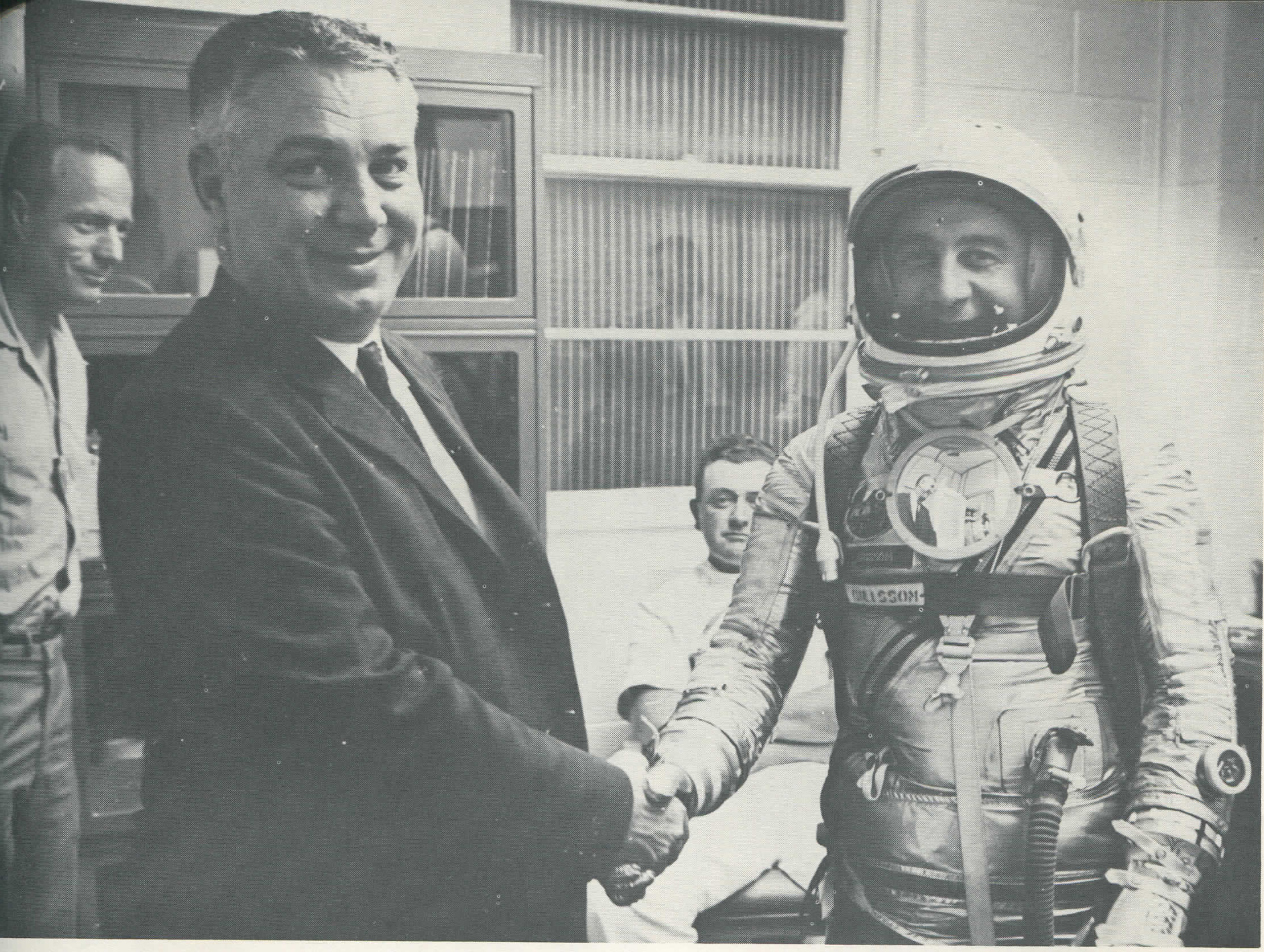


After two scrubs, Grissom seemed pleased that everything was ready to go. Meanwhile, the weathermen were still keeping their eyes on the cloud formations, the pad crew was putting the finishing touches on the bird, and up the gantry in the greenhouse around Liberty Bell the NASA engineers were awaiting the arrival of Grissom.

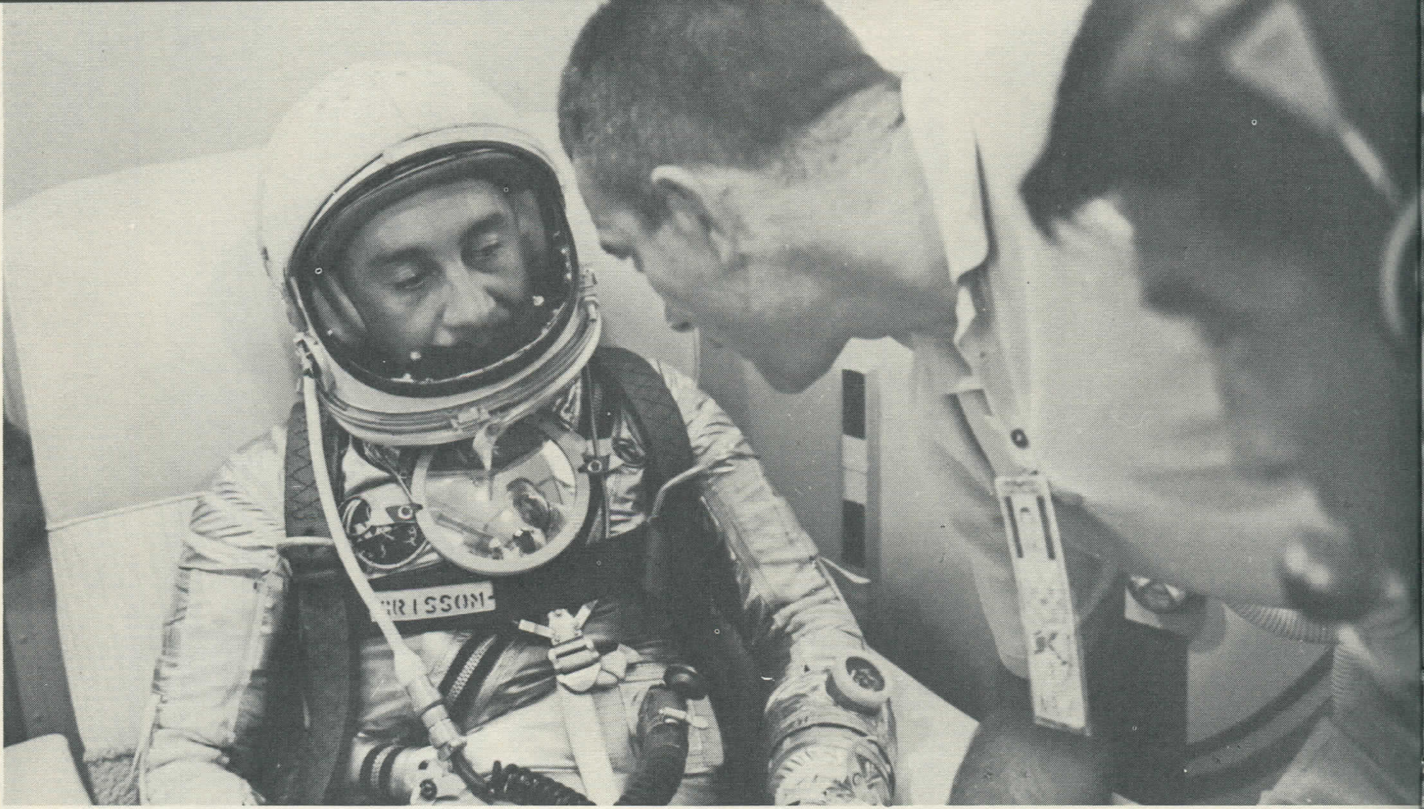

WARNING

I. GRISSOM
GRISSOM

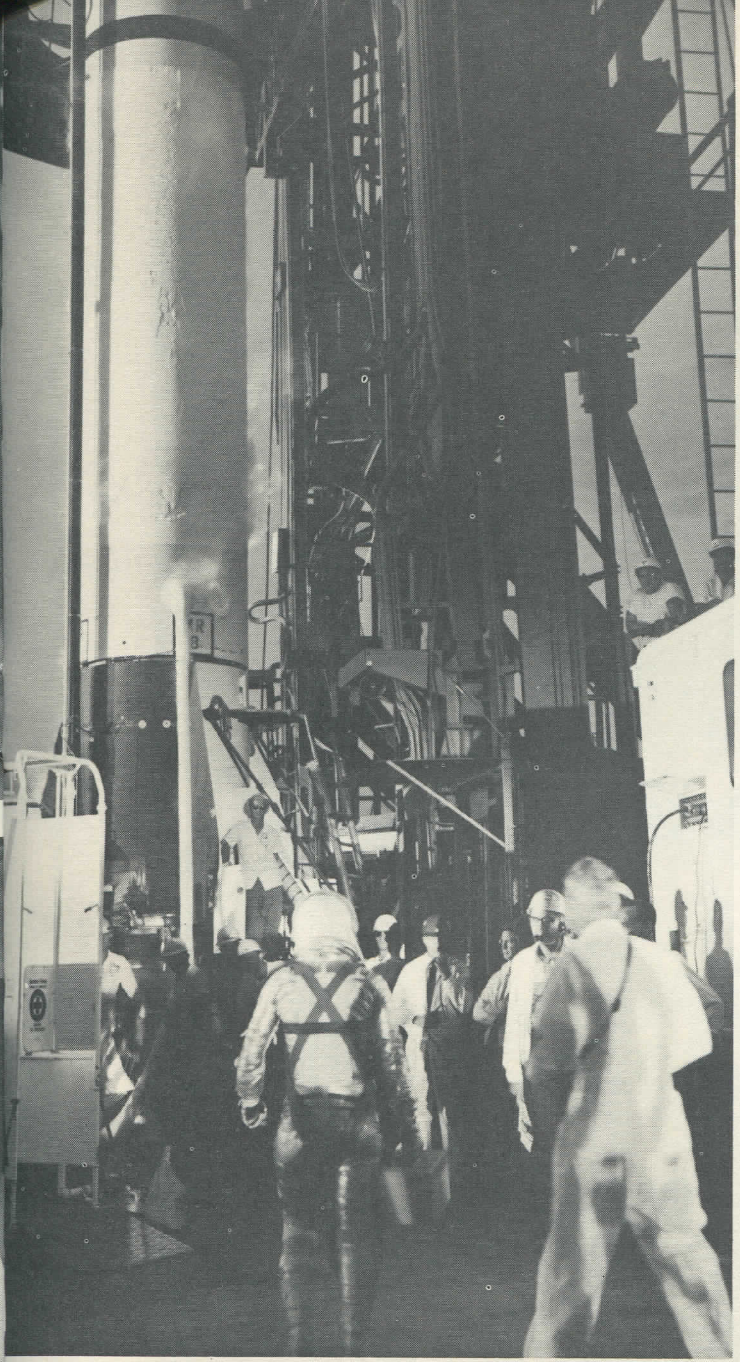
Astronaut Wally Schirra discusses the coming flight with Grissom shortly before leaving by van for the launch pad.



Project Mercury Associate Director Walter C. Williams extends his best wishes to the astronaut in Hangar S.

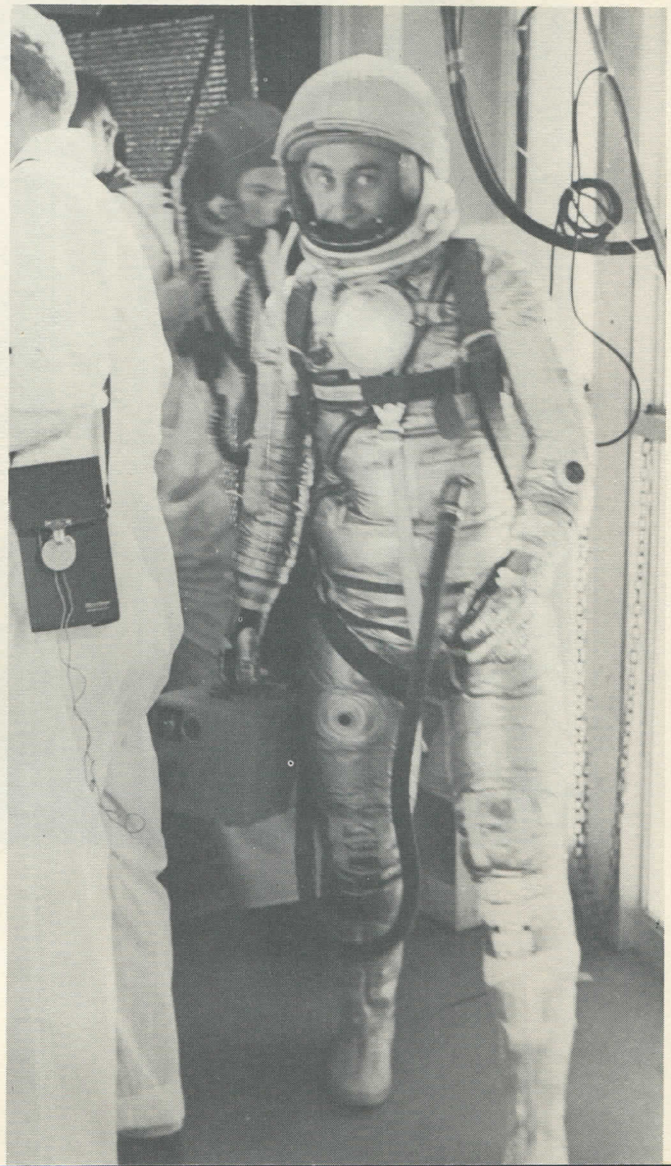


Astronaut Donald K. Slayton chats with Grissom on way to Pad 5 where Liberty Bell 7 awaited its date with history.



Grissom arrives at the pad and heads for the gantry elevator which will take him to the spacecraft level.

Grissom at spacecraft level shortly before insertion into Liberty Bell 7.



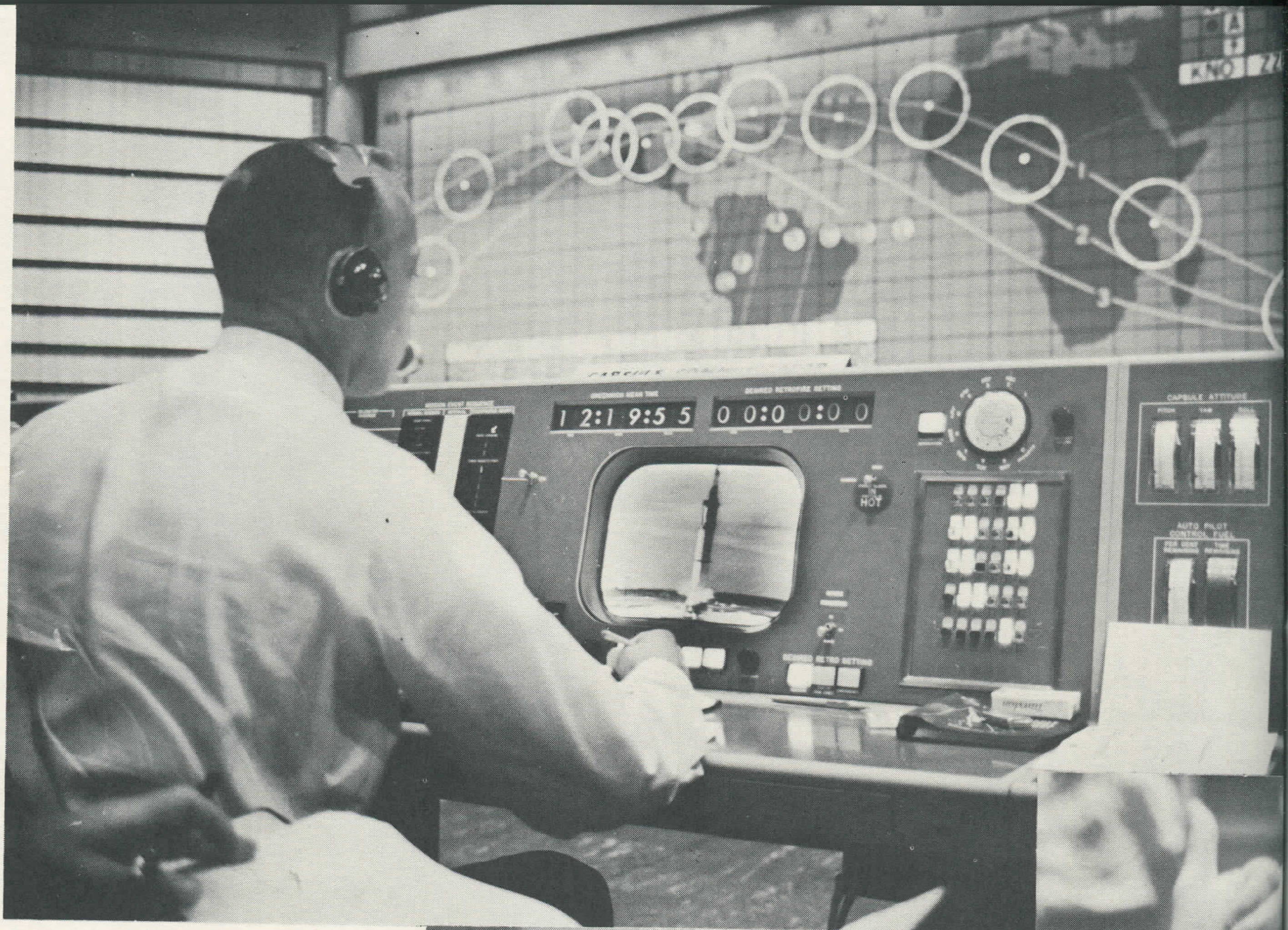
LIBERTY
BELL
7
GRISSOM

LIBERTY
BELL
7

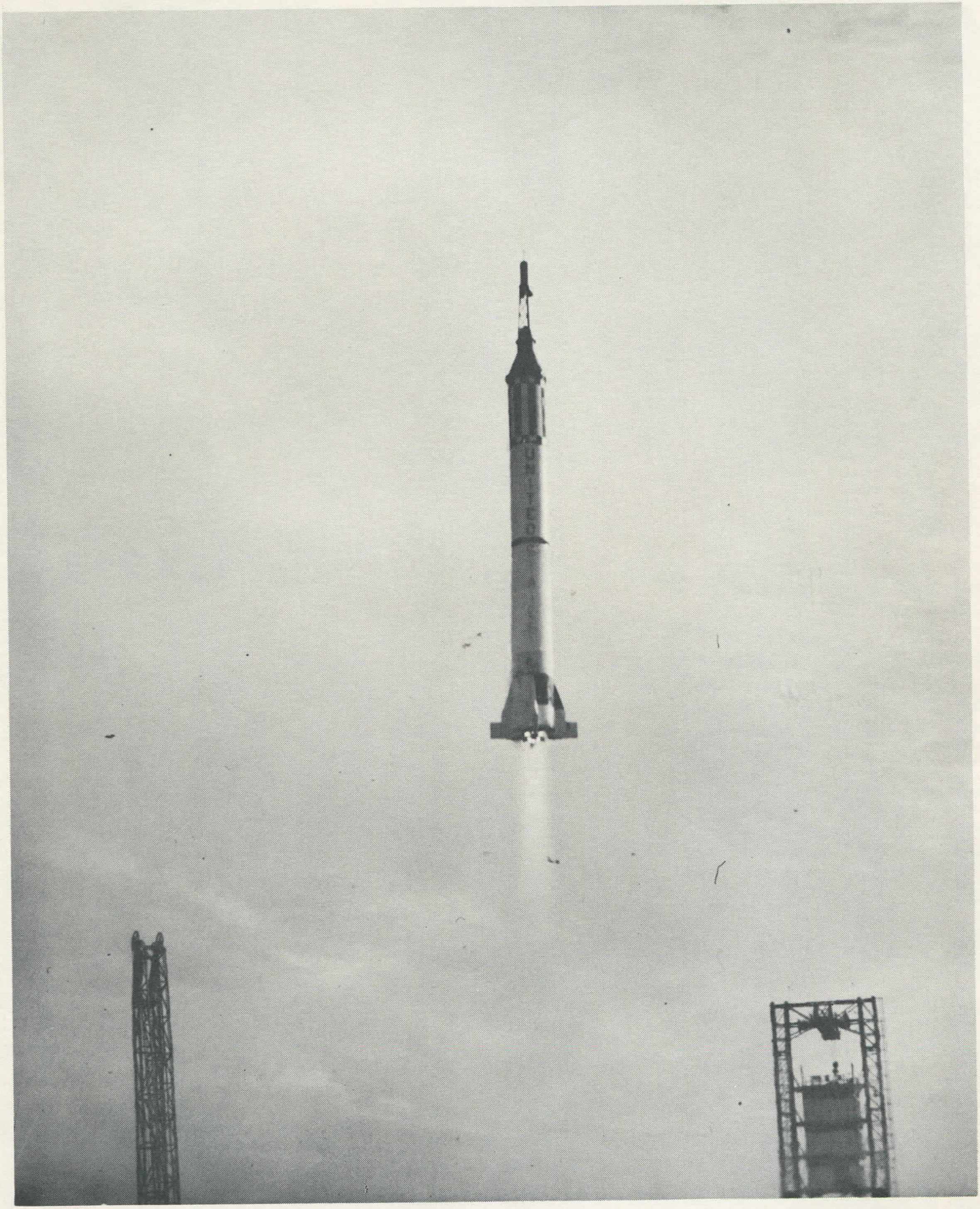
Insertion into Liberty Bell 7 has been completed. The hatch will soon be attached and the United States' second astronaut will be ready for flight.

The gantry has been moved away from MR-4 and the cherry picker is in position in case of an emergency.

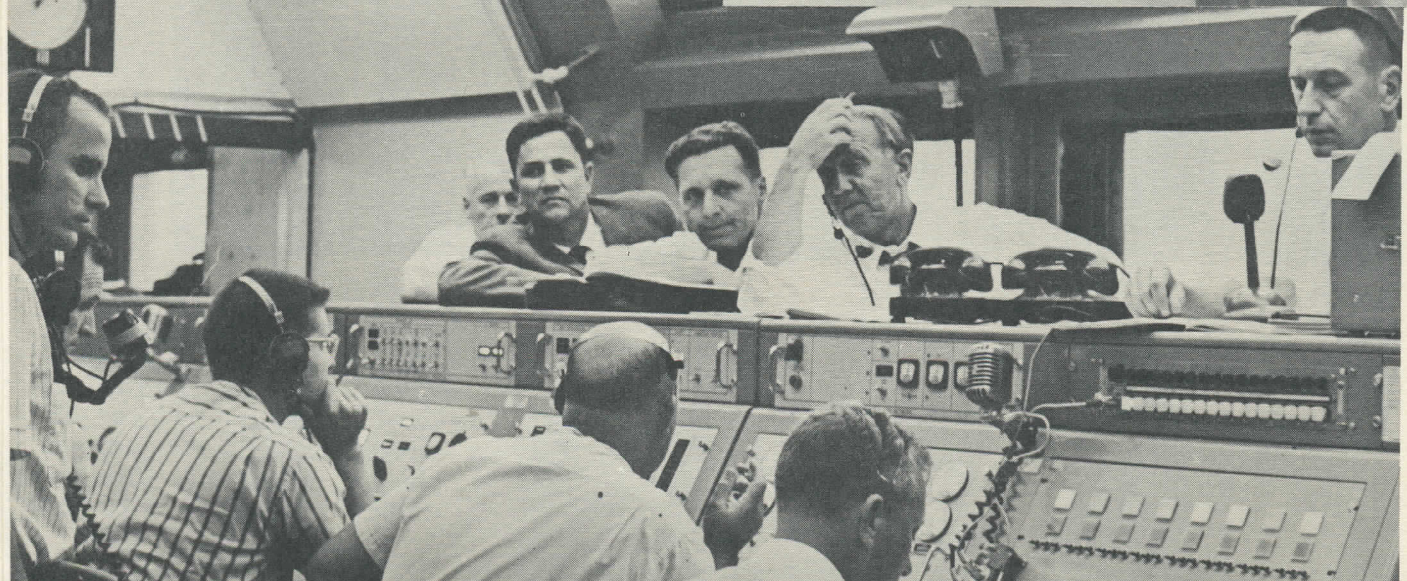
Walter C. Williams, Operations Director (left), and Chris Kraft, Flight Director, watch the countdown from their stations in Mercury Control Center.



Astronaut Alan B. Shepard, who made the MR-3 flight, served as capsule communicator for Grissom's flight. Above, he watches lift-off on the television monitor and, right, signals to others in the Control Center.

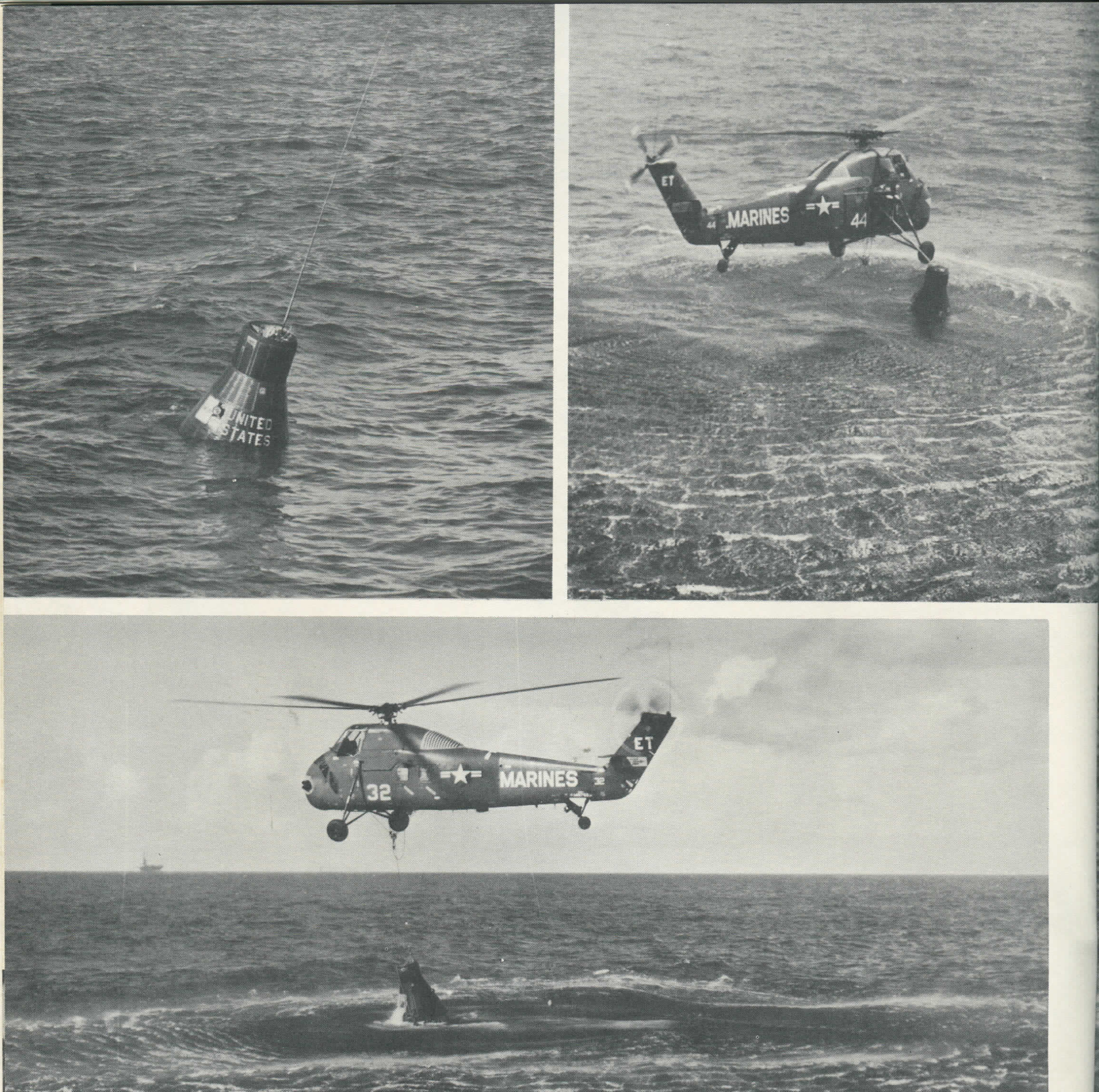

UNITED

In the Control Center (above and right) and in the blockhouse (below), NASA officials watch and listen to reports of the flight and the recovery of the astronaut.

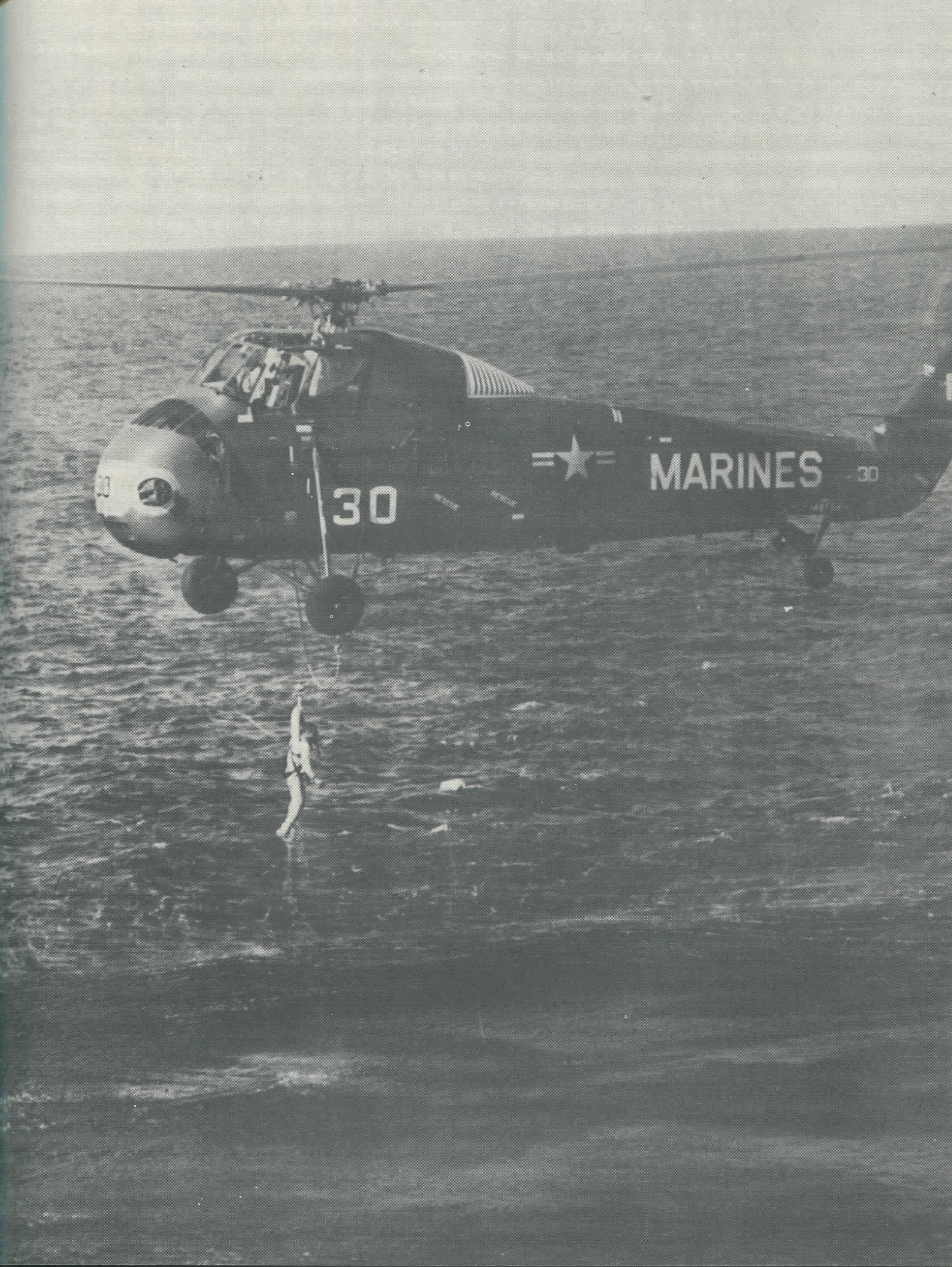


CAPSULE COMMUNICATOR

NASA



Although everything possible was done to save Liberty Bell 7, the Marine helicopter had to release the spacecraft due to an overheated engine. Grissom climbed out of the spacecraft and was picked up by a second helicopter and carried to the USS Randolph.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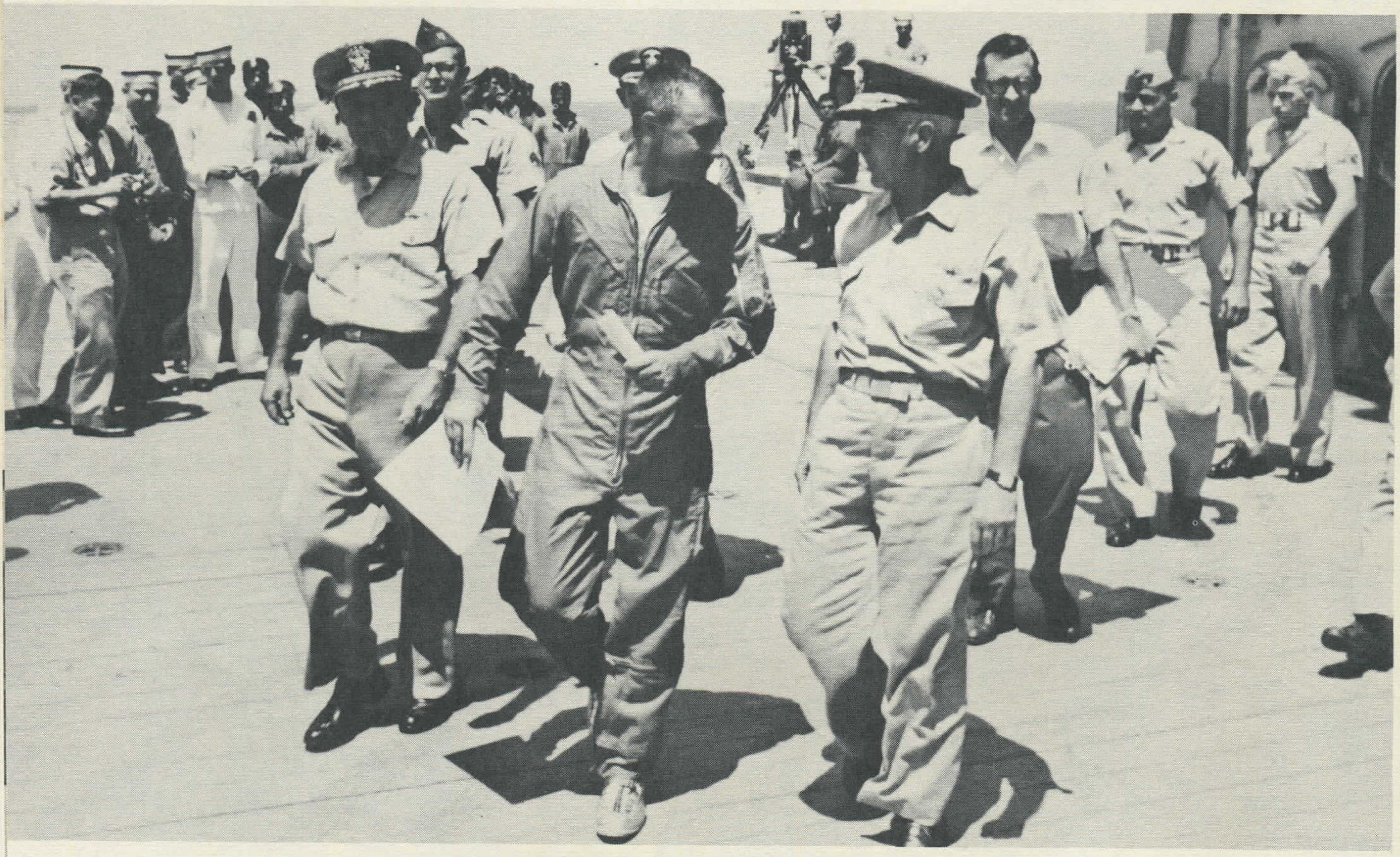
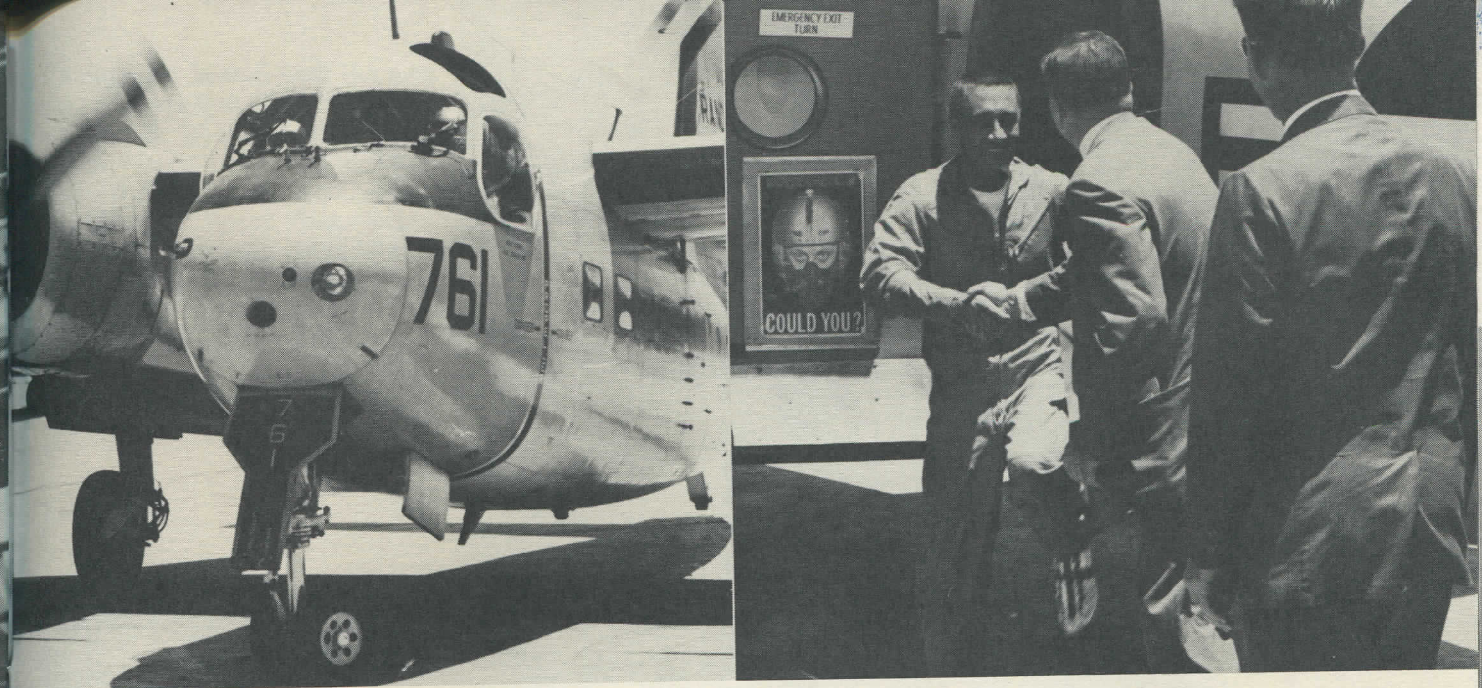
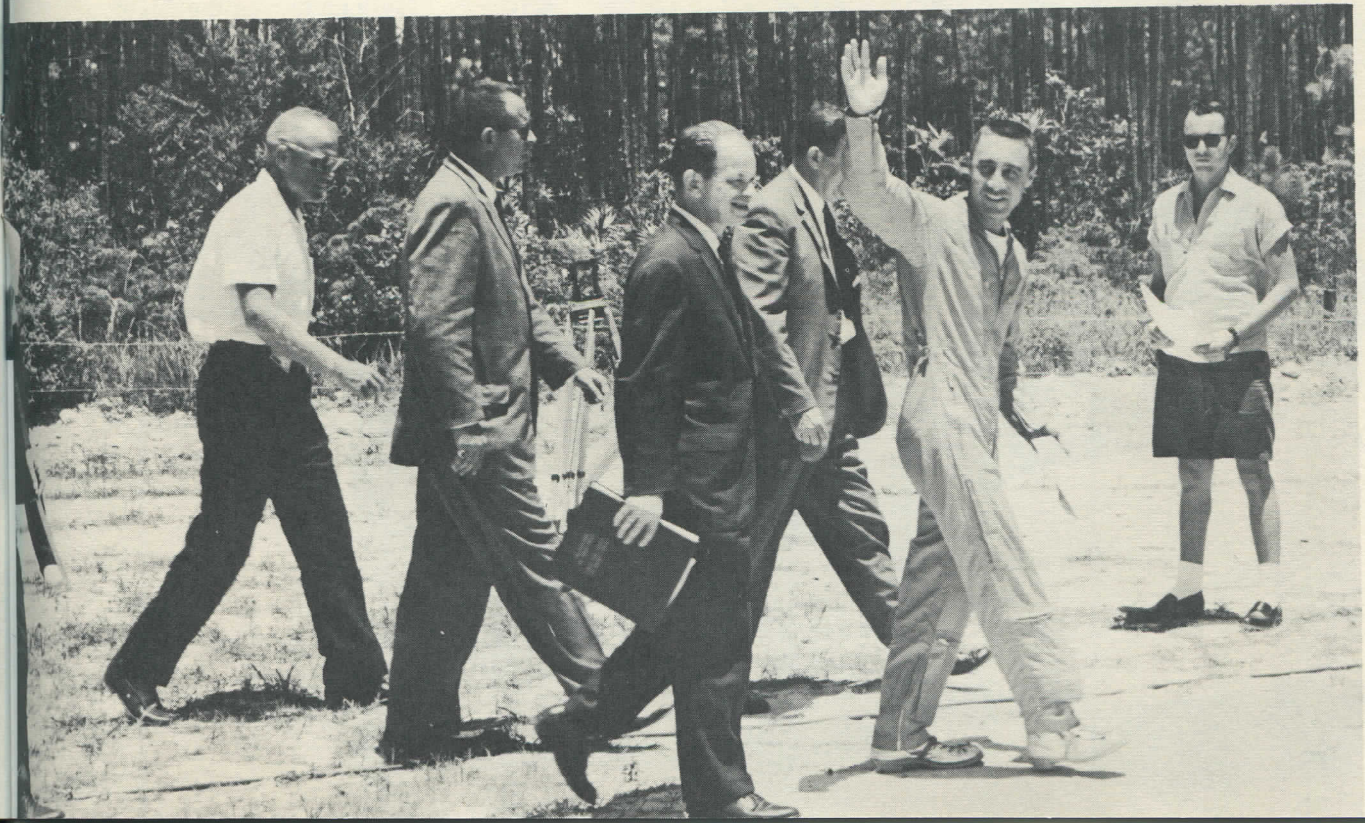
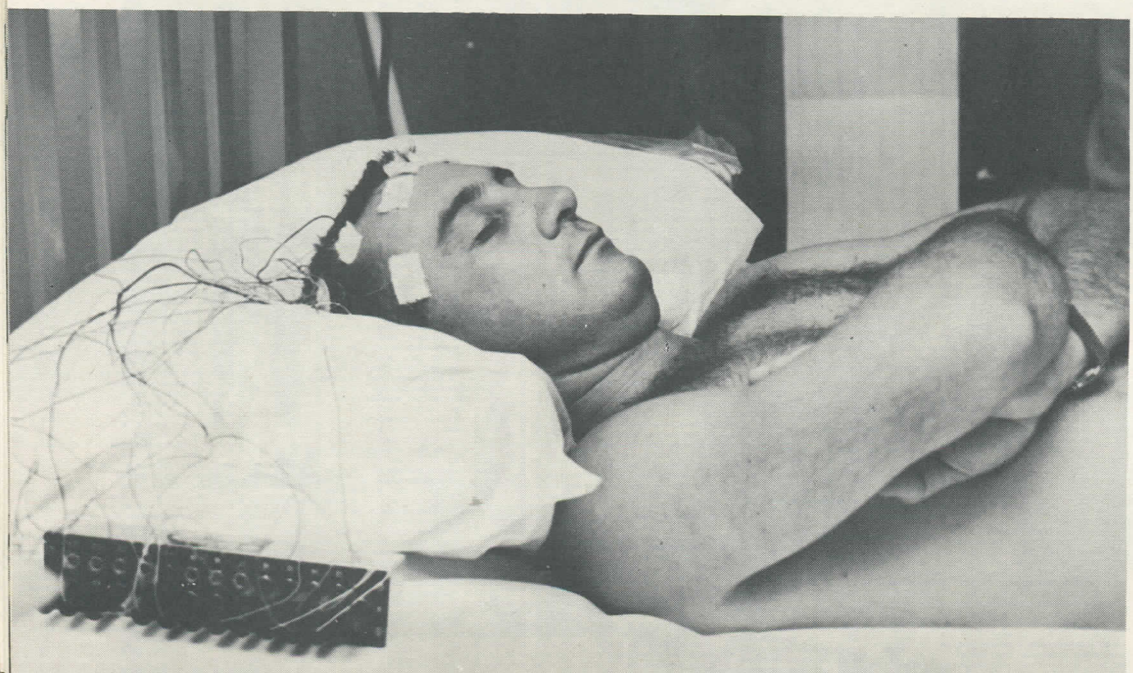


Practically the entire crew of the Randolph was out to see Grissom arrive aboard the carrier. Moments after his arrival he received a call from the President of the United States congratulating him on his successful flight.



Shortly after receiving a physical examination, Grissom was flown from the Randolph to Grand Bahama Island for more extensive physical checks and debriefing. There to greet him were (upper right) James B. Webb, Director of the National Aeronautics and Space Administration, and Astronaut Wally Schirra; and (below, left to right) Astronaut John H. Glenn; O. B. Lloyd, Director, Office of Public Information, NASA Headquarters; and John A. Powers, Public Affairs Officer, Space Task Group.

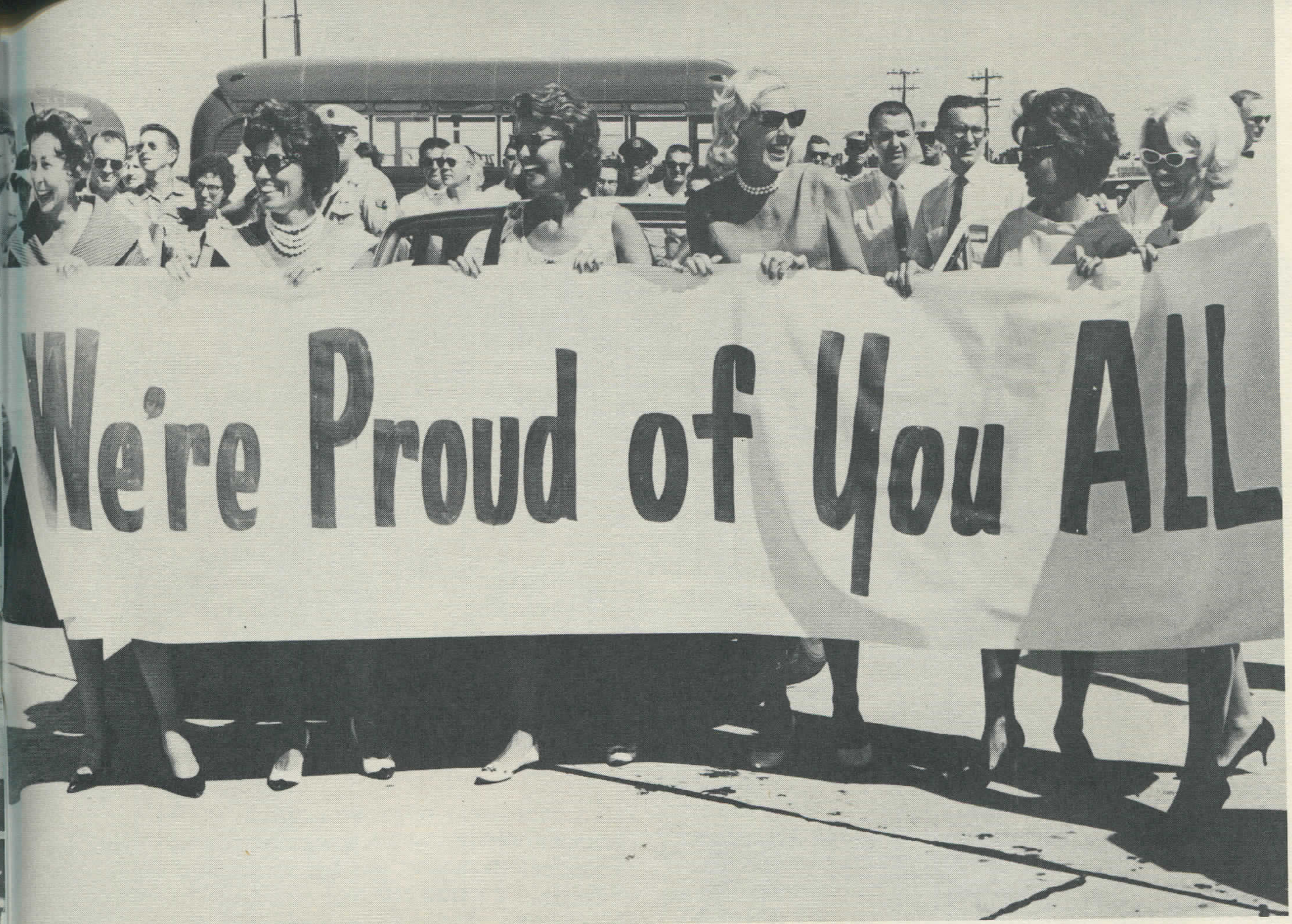




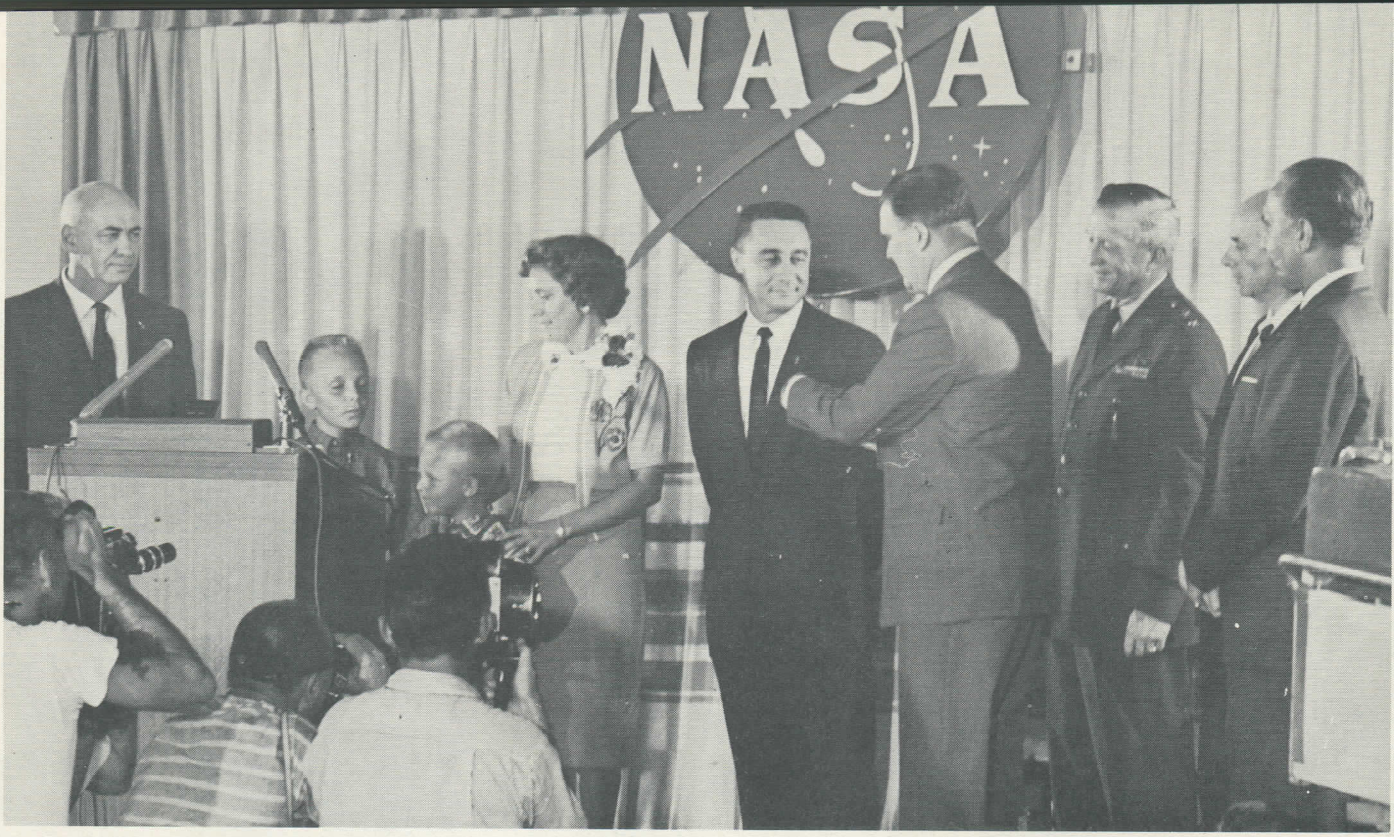
While at Grand Bahama Island, Grissom underwent thorough physical examinations and debriefing sessions in which he described fully his observations and feelings during the flight.

Enjoying a launch with the new space pilot are (left to right) Astronaut Alan B. Shepard; Robert R. Gilruth, Director, Space Task Group; Walter C. Williams, Associate Director, Space Task Group; and John A. Powers, Public Affairs Officer, Space Task Group.

Grissom describes to Space Task Group officials how it felt to ride the nose of a Redstone launch vehicle into space. Listening intently to the description are (left to right) Mr. Gilruth, Mr. Williams, Dr. Douglas, and Astronauts L. Gordon Cooper and M. Scott Carpenter.


We're Proud of You ALL

Following the stay at Grand Bahama Island, Grissom was flown back to Patrick Air Force Base, Florida, where he was joined by his wife, Betty, and two sons, Mark and Scott. Also on hand were several hundred well wishers as well as the wives of the other six astronauts who had a little welcome of their own.



Shortly after his arrival back at the Cape area, a press conference was held at which Grissom described his flight to news media representatives. Before Grissom made his remarks, Mr. Webb presented him with the NASA Distinguished Service Medal for his "outstanding contributions to space technology." Mr. Webb said, "I could present Captain Grissom as an aeronaut, a test pilot, a graduate of that school of experimental flying through which over the 58 years since the Wright brothers flew, a handful of brave men have taken the personal risks necessary to prove in flight the new aircraft ideas and designs which now benefit so many millions through air transport and add so much to our national security. I could present him as one of the seven astronauts. These seven men have devoted almost three years of their lives to providing the pilot element in the Mercury system, utilizing our most advanced science and technology for the purpose of producing machines capable of aiding man in exploring and extending his knowledge of the universe . . . for the benefit of all mankind."

NASA-Langley, 1961

During the press conference, Grissom described in detail the flight that took him into history. He said, ". . . Then the horizon came into view, with the earth, and this is the thing that is really fascinating. I don't know how to describe it, but the earth was very bright. At this time I couldn't see any land. I could see the horizon, a very round horizon, and very light wispy cirrus clouds. Then there is a band around the earth, starting with a sort of a light blue at the bottom and fading into a darker blue; there is a very fuzzy edge that is probably going from blue to black, and then very black everywhere - a very black sky all over. . . . I was so fascinated by this view out the window that I had difficulty concentrating on the instruments. I kept wanting to peek out the window, which is what I did. . . ."

And with these words the free world's second astronaut to travel through space gave his opinions and thoughts for everyone to hear.

UNITED
STATES